



May 22, 2018

Ms. Michelle Kaysen  
United States Environmental Protection Agency Region 5  
Mail Code LU-9J  
77 West Jackson Boulevard  
Chicago, Illinois 60604

RE: Response to Agency Comments regarding the *Summary of Soil Vapor Extraction System Expansion, Hartford Petroleum Release Site, Hartford, Illinois*

Dear Ms. Kaysen,

212 Environmental Consulting, LLC on behalf of Apex Oil Company, Inc. (Apex) submitted the *Summary of Soil Vapor Extraction System Expansion, Hartford Petroleum Release Site, Hartford, Illinois* to the United States Environmental Protection Agency (USEPA) and the Illinois Environmental Protection Agency (Illinois EPA) on December 8, 2017. The USEPA and Illinois EPA provided comments regarding this memorandum to Apex on January 22, 2018. Apex's response to the USEPA and Illinois EPA comments are included herein. In addition, the memo entitled *Summary of Soil Vapor Extraction System Expansion, Hartford Petroleum Release Site, Hartford, Illinois* (2017b) has been revised and submitted to the USEPA and Illinois EPA with this correspondence.

## INTRODUCTION

**USEPA Comment No. 1 (Page 1, Paragraph 2, Sentence 1):** Confirm what specific lines of evidence were used to select the candidate SVE well and monitoring point installation locations and screening intervals.

**Apex Response to USEPA Comment No. 1:** The following summary regarding the lines of evidence considered in selecting the locations of the multipurpose monitoring points and extraction wells, as well as the screen intervals for the newly installed wells will be added to the introduction of the *Revised Summary of Soil Vapor Extraction System Expansion, Hartford Petroleum Release Site, Hartford, Illinois*.

"On November 17, 2015, during a technical meeting with the United States Environmental Protection Agency (USEPA), Illinois Environmental Protection Agency (Illinois EPA), and Apex Oil Company, Inc. (Apex), the USEPA requested that Apex continue to optimize and implement the vapor extraction components of the *Active LNAPL Recovery System 90% Design Report, The Hartford Area Hydrocarbon Plume Site, Hartford, Illinois (90% Design Report, Clayton 2006)*, independent of testing and design of additional remedial technologies. Apex subsequently



MS. MICHELLE KAYSEN  
May 22, 2018  
PAGE 2

conducted additional testing and evaluation of the infrastructure and operations within SVE Effectiveness Zone 6 to determine if there were modifications to the vapor collection system or the treatment system that would enhance mass recovery in the northeast portion of the Hartford Site. This included the following:

- Reevaluation of the three-dimensional (3D) visualization of the hydrogeologic setting underlying Effectiveness Zone 6. A detailed 3D visualization of the lithology described during installation of soil borings was prepared and subsequently compared to the generalized 3D stratigraphic interpretation of the geologic setting. These 3D visualization analyses were compared to determine if there are additional geologic factors that may be affecting recovery of volatile hydrocarbons in the North Olive and Rand hydrostratigraphic units beneath Effectiveness Zone 6.
- Field testing of increased water recovery rates within selected extraction wells screened in the Rand stratum along North Olive Avenue (referred to as the enhanced total phase extraction test) to determine if additional water recovery using stingers (as well as the existing transmission system and treatment infrastructure) would allow for sustained exposure of the well screen and improved vapor recovery.
- Evaluation of the construction, operation, and maintenance within the existing SVE wells within Zone 6 to determine if modification to the existing system and/or installation of additional extraction wells may enhance mass recovery. This evaluation included an examination of the distribution of total volatile petroleum hydrocarbon distribution (TVPH) and oxygen in soil vapor, as well as the distribution of static vacuum in monitoring locations primarily screened within the North Olive stratum.

The results of the additional testing and evaluations were described in the *Draft Soil Vapor Extraction System Effectiveness Zone 6 Optimization Report* (212 Environmental 2016a) and considered by Apex as part of recommending the (1) installation of new extraction wells HSVE-108 and HSVE-109, (2) connection of existing wells HSVE-001D and HSVE-030S to the Phase III transmission system, and (3) installation of seven additional effectiveness monitoring locations (MP-138 through MP-144).

The USEPA and Illinois EPA provided Apex with comments regarding the *Draft Soil Vapor Extraction System Effectiveness Zone 6 Optimization Report* (212 Environmental 2016a) via correspondence on August 2, 2016. A response to the Agency comments, as well as the *Revised Soil Vapor Extraction System Effectiveness Zone 6 Optimization Report, Hartford Petroleum Release Site, Hartford, Illinois* (212 Environmental 2016b), was provided to the USEPA and Illinois EPA on August 26, 2016. The Agencies subsequently provided additional comments, including a request for the installation of up to four additional SVE wells along North Olive Avenue in Effectiveness Zone 6, via the October 4, 2016 correspondence entitled *Secondary Review Comments on Apex Oil Company, Inc. Response to USEPA Comments, Draft Soil Vapor Extraction System Effectiveness*



MS. MICHELLE KAYSEN  
May 22, 2018  
PAGE 3

*Zone 6 Optimization Report (Secondary Review Comments)*. The Agencies and Apex met on October 13, 2016 and Apex ultimately agreed to the installation of the two northernmost SVE wells proposed by the USEPA along North Olive Avenue (extraction wells HSVE-110 and HSVE-111). Following Agency concurrence, the *Final Soil Vapor Extraction System Effectiveness Zone 6 Optimization Report* (212 Environmental 2016d) was provided to the USEPA and Illinois EPA on October 26, 2016, which incorporated responses to each of the comments received from the USEPA and Illinois EPA.

In addition, Apex recommended the connection of existing well HSVE-104 (located in SVE Effectiveness Zone 1) and installation of additional well HSVE-112 (located in SVE Effectiveness Zone 5) within the *Semiannual Soil Vapor Extraction System Operations, Maintenance, and Monitoring Report, October 2015 through March 2016* (212 Environmental 2016c) based on elevated TVPH concentrations in soil vapor collected from nearby monitoring locations and sub-slab probes. The USEPA and Illinois EPA provided comments to Apex regarding the *Semiannual Soil Vapor Extraction System Operations, Maintenance, and Monitoring Report, October 2015 through March 2016* (212 Environmental 2016c) via correspondence dated November 22, 2016. Within these comments the Agencies concurred with connection of existing extraction well HSVE-104 and installation of new well HSVE-112; as well as recommending the installation of one additional well HSVE-113 (located in Effectiveness Zone 1). On April 6, 2017, the USEPA, Illinois EPA and Apex met via teleconference to discuss the comments and the forthcoming revisions to the report. A response to comments, as well as the revised *Semiannual Soil Vapor Extraction System Operations, Maintenance, and Monitoring Report, October 2015 through March 2016, Hartford Petroleum Site, Hartford, Illinois* (212 Environmental 2017a) was submitted to the Agencies on July 26, 2017.

Concurrent to the completion of the previously referenced reports, Apex prepared draft plans, design drawings, and specifications for the installation and connection of the three existing wells (HSVE-001D, HSVE-030S, and HSVE-104) and the installation and connection of six additional SVE wells (HSVE-108 through HSVE-113). The draft plan, design drawings, and specifications were submitted to the USEPA and Illinois EPA on March 4, 2017. The USEPA and Illinois EPA met with Apex on March 8, 2017 in Hartford, Illinois and provided verbal comments regarding the draft plans and specifications. The plans and specifications were subsequently revised and provided to the USEPA and Illinois EPA on March 9, 2017 prior to submittal to potential subcontractors.

As described in the final plans and specifications submitted to the Agencies on March 9, 2017, the depth and the screen interval within each the six new wells and eight multipurpose monitoring points were determined following review of the detailed lithologic description created by the professionally-licensed geologist during the installation of a continuous cored soil boring installed via direct push methodology at each proposed well location. The well screen



MS. MICHELLE KAYSEN  
May 22, 2018  
PAGE 4

interval for each extraction well and multipurpose monitoring point was defined following a review of the detailed lithologic log considering the hydrostratigraphic unit (e.g., North Olive or Rand stratum) where recovery or monitoring of petroleum related volatile constituents and methane were being targeted.

## **EXTRACTION WELL INSTALLATION**

**USEPA Comment No. 2 (General):** Clarify why the two SVE well/ piezometer pairs (HSVE-109; HSVE-110) were installed at locations where no hydrocarbon odors were detected or significant (> 10 ppmv) PID readings recorded.

**Apex Response to USEPA Comment No. 2:** As described in the *Final Soil Vapor Extraction System Effectiveness Zone 6 Optimization Report* (212 Environmental 2016d), extraction well HSVE-109 was proposed to be installed in a portion of Effectiveness Zone 6 where TVPH concentrations (which includes both methane and petroleum related volatile constituents) were routinely measured above 100,000 parts per million by volume (ppmv) within the North Olive stratum. In addition, elevated TVPH concentrations (exceeding the action level of 350 ppmv) were routinely measured in soil vapor collected from several of the sub-slab probes installed within 507 North Olive Avenue. The nearest operating extraction well, screened within the North Olive stratum (HSVE-074) was located approximately 100 feet to the northeast of 507 North Olive Avenue, but could only be operated approximately 50% of the time (since April 2015) due to occlusion of the well screen with groundwater, even with a stinger installed and operating. A sub-slab depressurization system was continuously operating within 507 North Olive Avenue to mitigate the vapor intrusion pathway.

Shortly following startup in July 2017, the TVPH concentrations measured within well HSVE-109 decreased significantly and have generally remained below 20 ppmv. The TVPH concentrations within soil vapor collected from nearby monitoring locations screened in the North Olive stratum decreased and have remained below 1,000 ppmv and TVPH concentrations measured in the sub-slab probes installed in 507 North Olive Avenue also decreased and have generally remained below 10 ppmv. It should be noted that TVPH concentrations in soil vapor collected from monitoring locations screened in the Rand stratum, near extraction well HSVE-109, were measured at 1,000,000 ppmv during the first quarter 2018 effectiveness monitoring event, providing evidence that operation of extraction well HSVE-109 is preventing migration of TVPH concentrations from the deeper portions of the subsurface into 507 North Olive Avenue, under current hydraulic conditions. A river stage triggered event has not occurred since well HSVE-109 was connected to the vapor collection system. Operation of the sub-slab depressurization system at 507 North Olive was suspended on December 6, 2017.



MS. MICHELLE KAYSEN  
May 22, 2018  
PAGE 5

As described in Apex's Response to USEPA Comment No. 1, extraction well HSVE-110 was proposed by the USEPA and Illinois EPA. The location of this well is coincident with continuously elevated TVPH concentrations measured in soil vapor collected from monitoring locations screened in the North Olive and Rand stratum. Recovery of volatile petroleum hydrocarbons and methane from extraction well HSVE-110 may be limited due to low soil gas permeability and elevated moisture content within the North Olive stratum in this portion of Effectiveness Zone 6.

**USEPA Comment No. 3 (General):** Confirm whether fluid levels were monitored upon installation of the 1-inch piezometers. If fluid levels were monitored, provide fluid level data.

**Apex Response to USEPA Comment No. 3:** Fluid level measurements were not collected immediately following the installation of the 1-inch multipurpose monitoring points. However, the licensed geologist did note if there was evidence for saturated conditions on the detailed lithologic log generated during collection of the continuous core from the soil boring. There was no evidence of saturated conditions within soil collected during the installation of multipurpose monitoring points MP-138 and MP-141 through MP-145. Saturated conditions were noted during the installation of monitoring points MP-139 and MP-140 at depths of 11.8 and 10.0 feet below ground surface, respectively. Lithologic logs generated during installation of the soil borings for the multipurpose monitoring points were provided in Attachment B of the *Summary of Soil Vapor Extraction System Expansion, Hartford Petroleum Release Site, Hartford, Illinois* (212 Environmental 2017b).

## MULTIPURPOSE MONITORING POINT INSTALLATION

**USEPA Comment No. 4 (General):** Provide a rationale for the technical purpose of each monitoring point and a rationale for their respective locations correlated with the as-built location maps in Attachments C and D.

**Apex Response to USEPA Comment No. 4:** Monitoring points MP-138 through 144 were installed to better assess vacuum distribution, as well as TVPH and fixed gas (oxygen, carbon dioxide, and methane) concentrations within the central portion of Effectiveness Zone 6, as described within the *Final Soil Vapor Extraction System Effectiveness Zone 6 Optimization Report* (212 Environmental 2016d). Monitoring point, MP-145, was installed near extraction well HSVE-113 to better assess vacuum distribution, as well as TVPH and fixed gas (oxygen, carbon dioxide, and methane) concentrations following startup of this new extraction well within this portion of Effectiveness Zone 1. As described in Apex's Response to USEPA Comment No. 1, a summary regarding the lines of evidence considered in selecting the locations of the multipurpose monitoring points and extraction wells, as well as the screen intervals for the newly installed wells will be added to the introduction of the *Revised Summary of Soil Vapor Extraction System Expansion, Hartford Petroleum Release Site, Hartford, Illinois*.



MS. MICHELLE KAYSEN  
May 22, 2018  
PAGE 6

**USEPA Comment No. 5 (General):** Clarify why the three single monitoring points (MP-142; MP-143; MP-145) were installed at locations where no hydrocarbon odors were detected or significant (>10 ppmv) PID readings recorded.

**Apex Response to USEPA Comment No. 5:** Please see the Apex's response to USEPA Comment No. 4.

**USEPA Comment No. 6 (General):** Provide plan information for monitoring, evaluation, and reporting of SVE well performance, zone of influence, and effectiveness. Provide information of how monitoring data will be used to determine the effectiveness of current monitoring point network adequacy for evaluating the total SVE system and each SVE well.

**Apex Response to USEPA Comment No. 6:** The purpose of the *Summary of Soil Vapor Extraction System Expansion, Hartford Petroleum Release Site, Hartford, Illinois* (212 Environmental 2017b), was to provide a summary of installation, connection, and initial operating data for the vapor extraction wells that were installed and/or connected to the vapor collection system between May and June 2017. Evaluation of the effectiveness of the individual SVE wells is conducted in accordance with the following Agency-approved work plans:

- Operation, maintenance, and monitoring of the vapor collection system is performed in accordance with the *Final Vapor Collection System Operation, Maintenance, and Monitoring Plan* (Trihydro 2015), finalized on September 4, 2015; incorporating the USEPA comments (dated July 24, 2015) and Apex's responses (dated August 20, 2015)
- Regional effectiveness monitoring, which includes quarterly screening within selected monitoring locations is performed in accordance with the *Effectiveness Monitoring Plan* (URS 2014b).
- In-home monitoring, including weekly and quarterly screening of indoor air and sub-slab soil vapor within select homes across the Hartford Site, is performed in general accordance with the *Final Interim In-Home Effectiveness Monitoring Plan* (Trihydro 2014).
- River stage triggered monitoring is performed in accordance with the triggers and methods described in the *Final Interim In-Home Effectiveness Monitoring Plan* (Trihydro 2014), as well as the *System Operation and Maintenance Response to River Rise, Groundwater Related and Sub-Slab Triggers* (URS 2014a)

The results of operations, maintenance, and monitoring activities performed in accordance with each of these plans are reported on a semiannual basis to the USEPA and Illinois EPA.





MS. MICHELLE KAYSEN  
May 22, 2018  
PAGE 7

## EXTRACTION WELL STARTUP AND INITIAL OPERATIONS SUMMARY

**USEPA Comment No. 7, (Page 6, Data Table):** More comprehensive evaluation of existing site data and/or supplemental investigation is recommended to identify locations with more favorable and certain conditions for mass removal prior to future SVE well installations.

**Apex Response to USEPA Comment No. 7:** The primary purpose of the SVE system is to control migration of volatile petroleum related constituents and methane to prevent vapor intrusion into overlying structures and to protect human health. While efforts are made to improve mass recovery, particularly when the groundwater and river stage elevation are low, this is not the primary function of the SVE system. Mass removal will be evaluated as part of the forthcoming remedial alternatives analyses process for each of the agreed upon remediation management areas as recently described within Section 8 of the *Conceptual Site Model, Hartford Petroleum Release Site, Hartford, Illinois* (212 Environmental 2018).

## TABLES

**USEPA Comment No. 8 (Table 1 – Routine Vapor Collection Monitoring Results):** Provide information regarding how the vapor flow measurement was conducted and an explanation of why these 0 scfm flow rate events occurred (for example, measurement error, etc.).

**Apex Response to USEPA Comment No. 8:** The following description has been added at the beginning of the third full paragraph on Page 6 of the *Revised Summary of Soil Vapor Extraction System Expansion, Hartford Petroleum Release Site, Hartford, Illinois*. "Vapor flowrate measurements were collected by connecting an ex-situ rotameter style flow meter (ERDCO™ 400 Armor-Flo® meter) in-line with the stinger (when in use) or the 2-inch vacuum header. An in-line water knockout was also employed upstream of the ERDCO™ meter to measure water recovery rates. Apex is currently utilizing a middle range (6-60 scfm) and upper range (20-200 scfm) ERDCO™ meter based on the historically reported flowrates from the individual extraction wells. However, it has long been understood that the historical flowrate measurements were inaccurate. Based on the redesigned wellhead completions and use of the ERDCO™ meters, it appears that in some cases the actual flowrate from the individual extraction wells are lower than 6 scfm. Therefore, Apex has recently purchased a lower range (2-20 scfm) ERDCO™ meter to allow for measurement of flowrates below 6 scfm."

There are several reasons why a well may have reduced vapor flowrates, or in some cases no flow, during operation including but not limited to: (1) occlusion of the well screen with groundwater, (2) occlusion of the stinger, (3) increasing soil moisture and decreasing soil gas permeability due to rainwater infiltrate or up-welling of groundwater from the underlying hydrostratigraphic units, (4) biofouling of the stinger or well screen, (5) sediment accumulation across the screen interval, and/or (6) sediment or water accumulation within the horizontal



MS. MICHELLE KAYSEN  
May 22, 2018  
PAGE 8

transmission line. It should be noted that while there was not any measurable flow within some of the newly installed and/or connected extraction wells at the time of initial startup, vapor flowrates were subsequently measured within each of the wells by mid-November 2017 (corresponding to decreasing groundwater elevations within the North Olive stratum). Vapor flowrates within the newly installed wells have continued to be variable based on the dynamic hydraulic conditions and well conditions since June 2017.

## **ATTACHMENTS**

**USEPA Comment No. 9 (Attachment B, Borehole Logs):** Revise the Borehole and Well Completion Logs to correct the well identification number labels in the diagrams for HSVE-109 through HSVE-113.

***Apex Response to USEPA Comment No. 9:*** The borehole logs included in Attachment B were corrected as requested.

**USEPA Comment No. 10 (Attachment B, Borehole Logs):** If fluid levels were monitored upon 1-inch piezometer installation, indicate measured fluid levels on the piezometer logs.

***Apex Response to USEPA Comment No. 10:*** Please refer to Apex's Response to USEPA Comment No. 3.

**USEPA Comment No. 11 (Attachment C, As-Built Drawings, Figure C7, Detail Area A):** Confirm whether this 0.25-inch stainless steel sample port will be used to measure actual wellhead vacuum (inside the well) as a true measure of vacuum applied to formation.

***Apex Response to USEPA Comment No. 11:*** The 0.25-inch stainless steel sample port is used to measure the wellhead vacuum as reported in Column U on Table 1. This detail was included with the final plans and specifications provided to the USEPA and Illinois EPA on March 9, 2017 prior to submittal to potential subcontractors.

**USEPA Comment No. 12 (Attachment C, As-Built Drawings, Figure C7, Detail Area B):** Confirm whether this 0.25-inch stainless steel sample port will be used to measure actual wellhead vacuum (inside the well) as a true measure of vacuum applied to formation.

***Apex Response to USEPA Comment No. 12:*** Please refer to Apex's Response to USEPA Comment No. 11.

**USEPA Comment No. 13 (Attachment C, As-Built Drawings, Figure C8, Detail Area A):** Recommend installing a sample port between the downstream 2-inch stainless steel gate valve and





MS. MICHELLE KAYSEN  
May 22, 2018  
PAGE 9

the 2-inch PVC tee (see red arrow). Suggest that the sampling tube is installed protruding through the wall into the pipe for 0.5 to 1 inch. Use high vacuum sampling pump with vacuum rating higher than operating vacuum of the system. In this manner the vapor samples could be collected while operating (under vacuum). Vapor samples collected in this manner would be more representative of the actual vapor stream conditions compared to current methodology wherein vapor samples are collected after the SVE well is shut down

***Apex Response to USEPA Comment No. 13:*** The wellhead and control vault details were provided to the USEPA and Illinois EPA with the final plans and specifications on March 9, 2017 prior to submittal to potential subcontractors. The current procedure for collecting a soil vapor sample from an extraction well is to: (1) connect a portable pump to the 0.25-inch stainless steel sample port installed on the wellhead, (2) momentarily shutdown the vacuum from the extraction well (if the well is operating), and (3) immediately collect a soil vapor sample within a Tedlar bag. The soil vapor sample collected in the Tedlar bag is subsequently screened using field meters (including a ThermoScientific™ TVA1000B® or TVA2020® flame ionization detector and a Landtec™ GEM 2000® multigas meter) at the Apex field office.

The soil vapor contained within the wellhead and transmission line is believed to be homogeneous and momentary shutdown of the vacuum within the extraction well and transmission line (if the well is operating) should not impact the representativeness of the sample. It should be noted that the field screening results for the vapor sample collected from each well is a single indicator used for making adjustments to the individual extraction well. The data is also used for estimating the mass removal rate from each extraction well for comparison to the total mass removal rate from the entire system; however, this estimate of the mass removal rate using the field screening data is not used for demonstrating compliance with the permitted air discharge limits for the thermal treatment system. In other words, the soil vapor screening data collected from the extraction wells is not used for compliance or risk-based decisions. It is not clear why the current procedures used to collect vapor samples from the individual extraction wells is not representative for the intended purpose of making well adjustments. It would be useful to have additional supporting information as to why the recommended procedure is preferable to the current procedure.

**USEPA Comment No. 14 (Attachment C, As-Built Drawings, Figure C8, Detail Area B):**

Recommend installing a sample port between the downstream 2-inch stainless steel gate valve and the 2- inch PVC tee (see red arrow). Suggest that the sampling tube is installed protruding through the wall into the pipe for 0.5 to 1 inch. Use high vacuum sampling pump with vacuum rating higher than operating vacuum of the system. In this manner the vapor samples could be collected while operating (under vacuum). Vapor samples collected in this manner would be more representative of the actual vapor stream conditions compared to current methodology wherein vapor samples are collected after the SVE well is shut down.



MS. MICHELLE KAYSEN  
May 22, 2018  
PAGE 10

**Apex Response to USEPA Comment No. 14:** Please refer to Apex's Response to USEPA Comment No. 13.

**USEPA Comment No. 15 (Attachment C, Figure C-7, New Control Vault and Wellhead Details):** Revise Figure C-7 Section Detail C to accurately depict the as-built separation distance between the 1-inch piezometer and the SVE well.

**Apex Response to USEPA Comment No. 15:** Figure C-7 was revised as requested.

**USEPA Comment No. 16 (Attachment D, As-Built Drawings):** Revise the as-built drawings to show the locations of monitoring points MP-138 to MP-145.

**Apex Response to USEPA Comment No. 16:** The as-built drawings provided in Attachment C were revised as requested.

**USEPA Comment No. 17 (Attachment D, As-Built, Drawings, Sheet 5, Detail Area D):** Revise Sheet 5 to show the 4-inch HDPE vacuum line connection from the HSVE-001D vault to the applicable SVE line

**Apex Response to USEPA Comment No. 17:** Sheet 5 in Attachment D was revised as requested.

**USEPA Comment No. 18 (Attachment D, As-Built, Drawings, Sheet 7, Detail Area F):** Revise Sheet 7 to show the 4-inch HDPE vacuum line connection from the HSVE-009 vault to the applicable SVE line.

**Apex Response to USEPA Comment No. 18:** Sheet 7 in Attachment D was revised as requested.

Apex appreciates your continued engagement with the Hartford Site. If you have any questions, please contact me at (513) 430-1766.

Sincerely,  
212 Environmental Consulting, LLC

A handwritten signature in blue ink, appearing to read 'P. Michalski', with a long horizontal flourish extending to the right.

Paul Michalski, P.G.  
Senior Hydrogeologist

cc: Jordy Federko, Apex Oil Company, Inc.  
Tom Miller, Illinois Environmental Protection Agency

## REFERENCES

- 212 Environmental Consulting (212 Environmental), LLC. 2016a. *Draft Soil Vapor Extraction System Effectiveness Zone 6 Optimization Report, Hartford Petroleum Release Site, Hartford, Illinois.* July 1.
- 212 Environmental Consulting (212 Environmental), LLC. 2016b. *Revised Soil Vapor Extraction System Effectiveness Zone 6 Optimization Report, Hartford Petroleum Release Site, Hartford, Illinois.* August 26.
- 212 Environmental Consulting (212 Environmental), LLC. 2016c. *Semiannual Soil Vapor Extraction System Operations, Maintenance, and Monitoring Report, October 2015 through March 2016, Hartford Petroleum Release Site, Hartford, Illinois.* November 22.
- 212 Environmental Consulting (212 Environmental), LLC. 2016d. *Final Soil Vapor Extraction System Effectiveness Zone 6 Optimization Report, Hartford Petroleum Release Site, Hartford, Illinois.* October 26.
- 212 Environmental Consulting, LLC (212 Environmental). 2017a. *Revised Semiannual Soil Vapor Extraction System Operations, Maintenance, and Monitoring Report, October 2015 through March 2016, Hartford Petroleum Release Site, Hartford, Illinois.* July 26.
- 212 Environmental Consulting, LLC (212 Environmental). 2017b. *Summary of Soil Vapor Extraction System Expansion, Hartford Petroleum Release Site, Hartford, Illinois.* December 8.
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- Clayton Group Services, Inc. (Clayton). 2006. *Proposal for an Active LNAPL Recovery System, The Hartford Area Hydrocarbon Plume Site, Hartford, Illinois.* February 2.
- Trihydro Corporation. 2014. *Final Interim In-Home Effectiveness Monitoring Plan, Hartford Petroleum Release Site, Hartford, Illinois.* January 3.
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